

REMARKS

The Office Action mailed May 11, 2005, has been received and reviewed. Claims 9 through 18, 20 through 23, and 42 through 50 are currently pending in the application, of which claims 9 through 18, and 20 through 23 are currently under examination. Claims 42 through 50 are withdrawn from consideration as being drawn to a non-elected invention. Claims 9 through 18, and 20 through 23 stand rejected. Applicant has amended claims 9, 11, and 15, and respectfully request reconsideration of the application as amended herein.

35 U.S.C. § 112 Claim Rejections

Claims 9 through 18, and 20 through 23 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Appropriate correction has been made, as suggested by the Examiner.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 6,229,320 to Haseyama in view of JP 10-293156 to Kawai

Claims 9, and 20 through 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Haseyama (U.S. Patent No. 6,229,320) in view of Kawai (JP 10-293156). Applicant respectfully traverses this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

The 35 U.S.C. § 103(a) obviousness rejections of claims 9, and 20 through 22 are

improper because Haseyama-1 and Kawai fail to teach or suggest all of the claim limitations contained therein.

Haseyama-1 teaches mounting an IC socket having solder bumps on an IC socket, which is mounted on a test board. An elastic member of the IC socket supports a plurality of straight contact pins, each having a lower end connected to a test board and an upper end connected to the solder bumps. The upper ends 30a of the contact pins 30 are flush with the upper surface 31a of the elastic member 31. The contact pins 30 pierce the solder bumps 28 so that the solder bumps 28 press the upper surface 31a of the elastic member 31. The elastic member 31 is elastically deformable, and the elastic member may be deformed elastically by being pressed by the solder bumps 28. Accordingly, the elastic member 31 is prevented from blocking the electrical connection between the contact pins 30 and the solder bumps 28. (FIG. 9, Col 8, lines 64-67, Col. 9 lines 1-6)

Claim 1, as amended herein, recites a “device for establishing electrical contact with a lead element extending from an IC device, comprising: a one-piece substrate bounded by a first surface and an opposing, second surface and having at least one conductive trace, wherein the first surface is configured for mounting a plurality of IC packages thereto; a spring contact including a generally uncoiled serpentine base portion and a contact portion longitudinally adjacent thereto, the contact portion comprising a resiliently compressible coil spring comprising a plurality of coils configured to bias against and electrically contact a lead element of an IC package of the plurality of IC packages, and the generally *uncoiled serpentine base portion* extending generally longitudinally away from the contact portion and transversely to the coils of the coil spring; and an aperture including a seat portion providing an opening onto the first surface of the one-piece substrate and a retaining portion having a substantially uniform diameter and a first end connected to an opposing end of the seat portion and a second end extending at least partially into the one-piece substrate, wherein *the area of the substantially uniform diameter of the retaining portion is smaller than the area of the opening of the seat portion at the first surface of the one-piece substrate*, the seat portion of the aperture sized and configured to at least partially contain the contact portion of the spring contact and *longitudinally support the coils of the coil spring* during compression thereof, and the retaining portion of the aperture configured to

receive and electrically connect the generally uncoiled serpentine base portion of the spring contact to the at least one conductive trace.” (emphasis added)

Haseyama-1 fails to teach or suggest an aperture including a seat portion providing an opening onto the first surface of the one-piece substrate, the seat portion of the aperture sized and configured to at least partially contain the contact portion of the spring contact and *longitudinally support the coils of the coil spring* during compression thereof. Rather, the bump positioning part 53A shown in FIG. 14B is formed to accommodate the solder bumps 28 formed in the IC 25.

The depicted contact pins 30 are straight. Straight contact pins 30 may be formed by cutting metal wires in a predetermined length. Since the process does not require a die, the cost of production can also be reduced. (Col. 6, lines 36-42, also Col 7 line 65- Col 8 line 2). The bump positioning part 53A does not longitudinally support the straight contact pins 30 of FIG. 14B. Rather, the bump positioning part is formed to accommodate the solder bumps 28, and the diameter of the contact pins 30 is designed to be 1/5-1/10 of the diameter of the solder bumps 28 (Col. 6, lines 49-51). The construction shown in FIGS. 21A and 21B features a spiral part 63 formed at the end of the contact pins 30. The spiral part 63 is inherently displaceable in a longitudinal direction. (Col. 15, lines 32-34) Hayeseyama-1 does not teach or suggest combining the spiral part construction shown in FIGS. 21A and 21B with the bump positioning part 53A shown in FIG. 14B. Further, Hayeseyama-1 teaches that the spiral part 63 is inherently displaceable in a longitudinal direction, and not longitudinally supported. (Col. 15, lines 32-34)

Hayeseyama-1 further fails to teach or suggest a retaining portion of an aperture configured to receive and electrically connect a generally uncoiled serpentine base portion of the spring contact to the at least one conductive trace. The mounting mechanisms shown in FIGS. 24A-24C are for mounting the IC sockets 20, 20A-20D on the test board 32, not for connecting a base portion of a spring contact to a conductive trace of a substrate. The connection part 46 shown in FIG. 16 is printed on the surface of the lower guide plate 42 that faces the test board. (Col. 12, lines 40-44). The connection part 46 used in conjunction with a straight contact pin 30, and is a part of a multiple piece contact unit, having a pair of guide plates provided to sandwich the elastic member 31A. (Col. 12, lines 28-33). The elastic member is configured to support straight contact pins. The contact pin construction shown in FIGS. 21A and 21B are also

depicted with straight base portions, not generally uncoiled serpentine base portions.

JP 10-293156 fails to cure the deficiencies of Haseyama-1.

Accordingly, the combination of Haseyama-1 and JP 10-293156 fail to teach or suggest each and every element of claim 9. Therefore, it is respectfully submitted that the rejection to claim 9 should be withdrawn.

Claims 20-22 are each allowable, among other reasons, as depending from claim 9 which should be allowed.

Claim 21 is additionally allowable as Haseyama-1 fails to teach or suggest a seat portion comprising a generally hemispherical recess formed in the first surface of the one-piece substrate, or a generally conical recess formed in the first surface of the one-piece substrate. FIG. 9 depicts the elastic member 31 deformed elastically by being pressed by the solder bumps 28. FIG. 11 depicts an insulating positioning plate with through holes 35 to guide the contact pins and positioning recesses 38 for positioning the solder bumps 28.

Obviousness Rejection Based on U.S. Patent No. 6,229,320 to Haseyama in view of JP 10-293156 to Kawai as applied to claim 9 above, and further in view of U.S. Publication No. 2002/0075025 A1 to Tanaka

Claims 11 through 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Haseyama (U.S. Patent No. 6,229,320) in view of Kawai (JP 10-293156) as applied to claim 9 above, and further in view of Tanaka (U.S. Publication No. 2002/0075025 A1). Applicant respectfully traverses this rejection, as hereinafter set forth.

Claims 11-14 are each allowable, among other reasons, as depending from claim 9 which should be allowed.

Claim 11 is further allowable as there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or combine the reference teachings. There is no motivation to combine the elastic member 31 supporting the contact pins 30 of Haseyama-1 with the through holes 3a having a gold plate layer 7 providing electrical connection to the internal leading wire 8 embedded in the multi-layer substrate 3 of Tanaka. There are no internal leading wires 8 in the

elastic member 31 of Hayesama-1, therefore there is no motivation to provide a gold plate layer 7.

Claim 12 is additionally allowable because there is no suggestion or motivation to combine the IC socket of Hayesama-1 with the gold plate layer 7 of Tanaka. The gold plate layer is provided between the contact pin 6 and the multi-layer substrate 3. (Paragraph [0028]) Tanaka fails to teach or suggest any benefit to the extension of gold layer 7 over the surface of the substrate 3, therefore there can be no motivation to provide this feature on the IC socket of Hayesama-1.

Claim 13 is further allowable because there is no suggestion or motivation to combine the IC socket of Hayesama-1 with the internal leading wire 8 embedded in the multi-layer substrate 3 of Tanaka. The land parts 33 of the test board 32 of Hayesama-1 are aligned with the straight contact pins 30 (FIG. 6), and therefore the laterally extending leading wires 8 of Tanaka would not provide a shorter signal path or reduce the number of structural elements of the test tool.

Obviousness Rejection Based on U.S. Patent No. 6,229,320 to Haseyama in view of JP 10-293156 to Kawai as applied to claim 9 above, and further in view of JP 2000-123935 to Kawaguchi

Claim 23 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Haseyama (U.S. Patent No. 6,229,320) in view of Kawai (JP 10-293156) as applied to claim 9 above, and further in view of Kawaguchi (JP 2000-123935). Applicant respectfully traverses this rejection, as hereinafter set forth.

Claim 23 is allowable, among other reasons, as depending from claim 9 which should be allowed. Applicants respectfully request reconsideration and allowance of dependent claim 23.

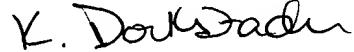
ENTRY OF AMENDMENTS

The amendments to claim 9, 11, and 15 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application.

CONCLUSION

Claims 9 through 18, 20 through 23, and 42 through 50 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicant's undersigned attorney.

Respectfully submitted,



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